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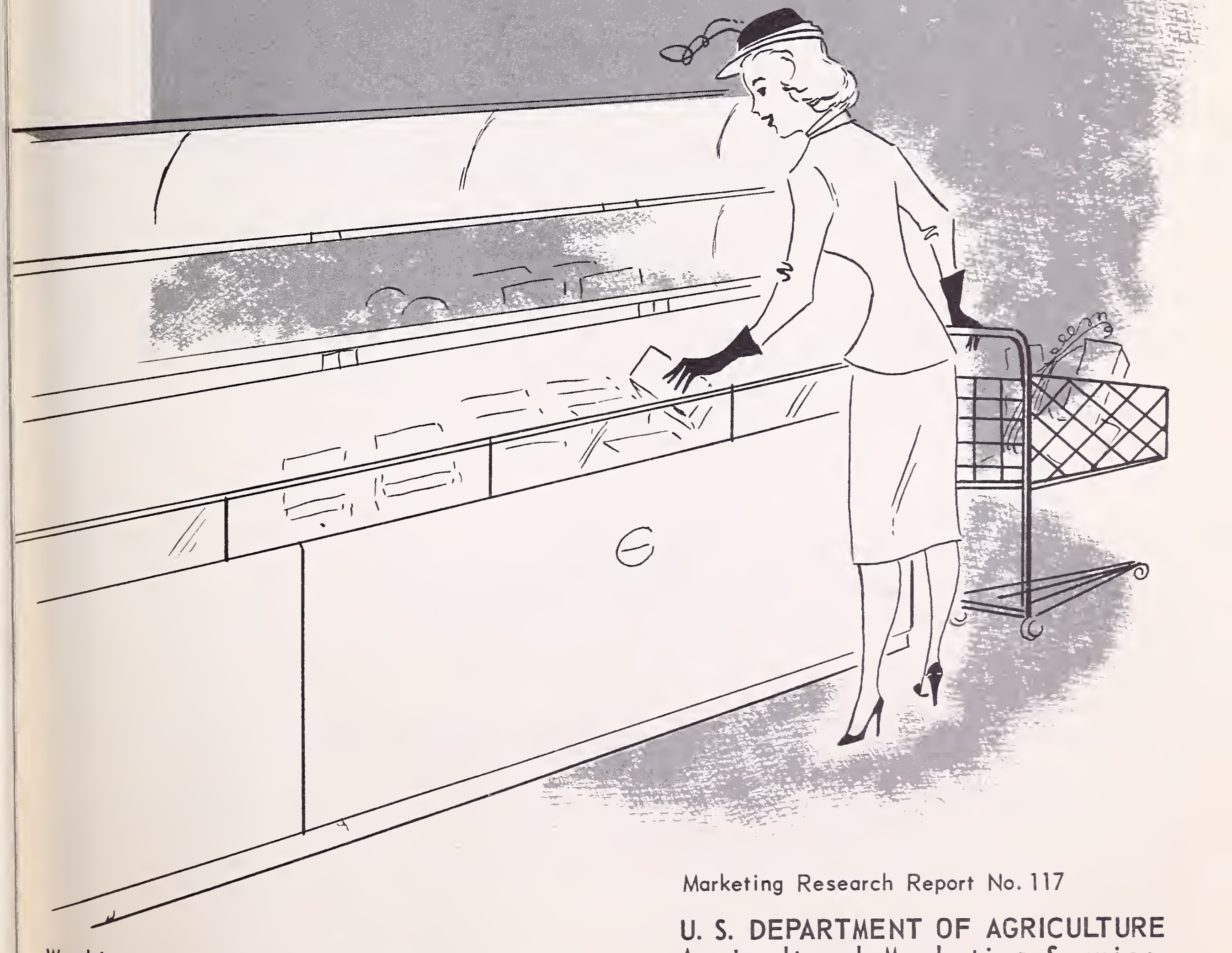
EFFECT OF SPECIFIC MERCHANDISING PRACTICES ON RETAIL SALES OF BUTTER



Marketing Research Report No. 117

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PREFACE

Appreciation is extended to the Kroger Company for making retail stores in Cleveland, Ohio, available for this research. Particular appreciation is due R. D. Hardesty and E. Harvey Seaman of the Kroger Company Research Department, Cincinnati, Ohio; Harvey Mone, Dairy Merchandising Manager, and Marty Stepp, dairy trainer for the Cleveland Branch of the Kroger Company; and store managers and clerks in the experimental stores.

The cooperation of the Fairmont Food Company in supplying butter to the retail stores in both pictorial and nonpictorial cartons made the test on the effect of packaging butter possible. Special appreciation is extended to A. C. Ragnow, vice president in charge of merchandising for Fairmont; William Wright, manager, and James Young, general sales manager for the Cleveland Branch of the Fairmont Company.

The Retail Clerks Union of Cleveland, Ohio, cooperated in this research by waiving union membership requirements for the enumerators who collected the data and partially maintained displays in the experimental stores.

The enumeration in the retail stores was carried out by Crosley S-D Surveys, Inc. under contract with the Department of Agriculture.

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EFFECT OF SPECIFIC MERCHANDISING PRACTICES ON RETAIL SALES OF BUTTER

By Henry J. Huelskamp, marketing specialist, William S. Hoofnagle and Mardy Myers, agricultural economists, Market Development Branch

SUMMARY AND CONCLUSIONS

The purpose of this research was to provide basic information in regard to the effect of various merchandising methods on retail sales of butter. The factors combined within the merchandising methods tested included: (1) the location of butter relative to margarine in the dairy display case, (2) size of the butter display, and (3) a pictorial versus a nonpictorial carton.

Results of the 16-week experiment in Cleveland, Ohio, indicated that while there were differences in sales volumes under different methods of merchandising, none of the observed differences were statistically significant; that is in all cases the probability is greater than 1 in 20 that the observed differences would occur as a result of chance.

Sales of neither butter nor margarine were increased to a statistically significant degree by displaying either product in the place first approached by normal flow of store traffic.

The quantity of butter displayed during this experiment did not appear to affect sales. When 25 percent more butter was placed in the dairy case than was used in the standard display, sales did not increase to a statistically significant degree. However, in test stores standard displays of butter were large, comparable in most instances with those for margarine.

Sales of butter in the pictorial carton did not indicate a statistically significant difference that could be attributed to this factor. Because of practical limitations, however, only a relatively small part of the total display was in pictorial cartons, and no special effort was used to make consumers aware of either pictorial or nonpictorial cartons.

During the experimental study, about 14 percent more butter than margarine was sold in the sample stores, and the dollar value of butter sold was approximately 3 times that of margarine. The ratio between the sales of these commodities remained relatively constant during the test period. Information from other sources indicates that butter characteristically outsells margarine in the Cleveland market.

INTRODUCTION

Over the last few years, the American Dairy Association, the American Butter Institute, and other dairy industry groups have embarked on an expanded program of advertising, promotion, and merchandising designed to increase sales of milk and dairy products. The Market Development Branch, Agricultural Marketing Service, has recently engaged in a limited program of marketing research designed to assist the industry in expanding consumption. As one element of the research program, a series of conferences was held among interested parties and the Department to determine what basic information was needed to appraise certain factors which may affect the sales of butter at the retail level. The basic merchandising methods tested in this experiment were selected as a result of these discussions.

It would not be practical to design a single experiment which would incorporate all the merchandising methods within the retail market that can possibly affect sales of butter. Therefore, the study was limited to determining the effect of location, size of display, and type of carton label on sales of the product.

OBJECTIVE

The objective of the merchandising experiment on butter was to determine the effect which the following factors have on the retail sales of product: (1) location of butter in the dairy case, (2) size of the butter display, and (3) type of carton label (a pictorial carton indicating various end uses of butter compared with a nonpictorial carton). The determination of the effects of the above mentioned factors, which are generally associated with increasing sales of particular products, should provide a basis for appraising the extent to which butter falls into the category of products that can be measurably affected by variations in merchandising practices. In addition, this research serves as a beginning toward an appraisal of the marketing of butter and thus provides a foundation for future research on retail sales of butter.

PROCEDURE

To evaluate the effects of the 3 merchandising factors tested in this study--location, size of display and pictorial versus nonpictorial carton--8 separate combinations of these factors were measured. Location of butter in the dairy case was tested by displaying butter in the position first approached by consumers in the normal flow of store traffic in 4 combinations, while in the other 4, margarine was displayed in the first postition, normally considered to have a favorable effect on sales for some commodities. The size of the butter display was increased 25 percent in 4 combinations; in the others the display was standard. The margarine display remained relatively constant in size throughout the experiment. The effect on sales of 2 kinds of carton was tested: a pictorial carton which indicated various end uses of butter, and a nonpictorial carton (fig. 1). Because of practical limitations, however, it was not possible to have a display of pictorial cartons only. The 8 combinations are referred to as different merchandising methods. They are:

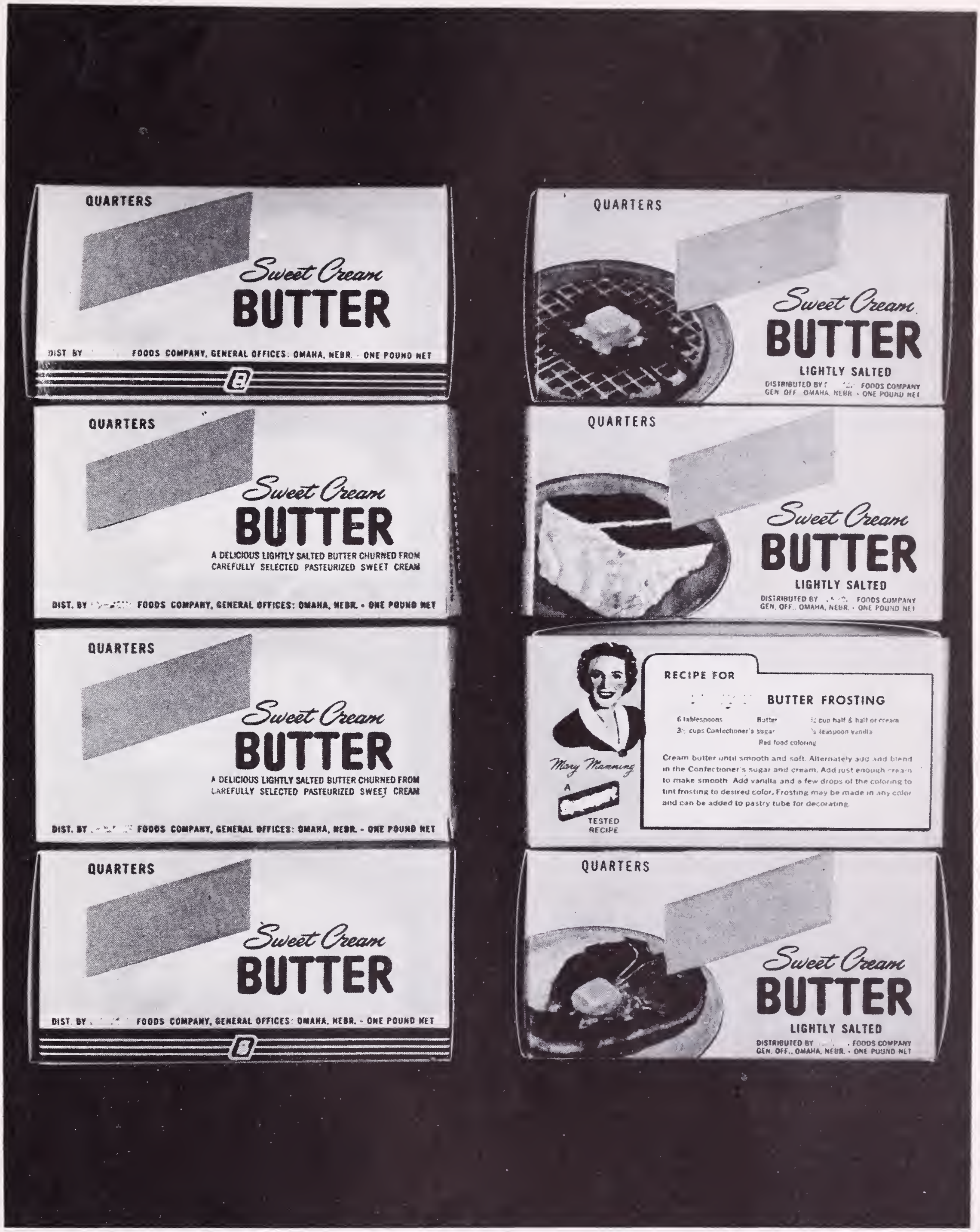
QUARTERS
Sweet Cream
BUTTER
A DELICIOUS LIGHTLY SALTED BUTTER CHURNED FROM CAREFULLY SELECTED PASTEURIZED SWEET CREAM
DIST. BY FOODS COMPANY, GENERAL OFFICES: OMAHA, NEBR. - ONE POUND NET
LIGHTLY SALTED
DISTRIBUTED BY FOODS COMPANY GEN. OFF., OMAHA, NEBR. - ONE POUND NET
RECIPE FOR
BUTTER FROSTING
Mary Manning
TESTED RECIPE

Figure 1.--Butter displayed in pictorial cartons and in nonpictorial cartons to determine effect of carton label on sales.

A. Butter located before margarine in a pictorial carton with a standard size display [1]

B. Butter located before margarine in a nonpictorial carton with a standard size display

C. Butter located before margarine in a pictorial carton with a large size display [2]

D. Butter located before margarine in a nonpictorial carton with a large size display

E. Butter located after margarine in a pictorial carton with a standard size display

F. Butter located after margarine in a pictorial carton with a large size display

G. Butter located after margarine in a nonpictorial carton with a standard size display

H. Butter located after margarine in a nonpictorial carton with a large size display

The procedure followed in this study was to test each method in the same number of stores and for the same number of time periods in a rotational design. The stores used were self-service supermarket units of a national chain organization. The experiment was conducted in Cleveland, Ohio, for 16 weeks in the spring of 1955. Total pounds of butter sold by each specified merchandising method were recorded and an analysis was made of the statistical significance of the difference in sales between the methods tested.

RESULTS

Statistical analysis of data based on the total pounds of butter sold by each specified merchandising method revealed slight differences. Sales were greatest when butter was displayed before margarine, in pictorial cartons, first in standard size displays and second in large size displays. Sales were least when butter was displayed after margarine, in nonpictorial cartons, and in large size displays. The maximum difference in sales between various merchandising methods was 12 percent (table 1). However, not even this difference was statistically significant. Moreover, further examination revealed that the separate factors comprising the merchandising methods resulting in the highest volume of sales were not consistently effective in influencing sales when applied in other combinations.

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[1] Standard display was that normally carried in the display case.

[2] Large displays were 25 percent larger than standard displays.

Table 1.--Quantity of butter sold in 16 weeks, by specified methods, in 14 retail food chain stores, Cleveland, Ohio, spring 1955

Merchandising methods (Ranked in order of total sales)	Adjusted total sales 1/
	Pounds
A. Before margarine, pictorial carton, standard display	22,526
C. Before margarine, pictorial carton, large display	21,413
G. After margarine, nonpictorial carton, standard display	21,189
B. Before margarine, nonpictorial carton, standard display	21,049
D. Before margarine, nonpictorial carton, large display	20,937
F. After margarine, pictorial carton, large display	20,762
E. After margarine, pictorial carton, standard display	20,293
H. After margarine, nonpictorial carton, large display	20,202

1/ Adjusted to allow for the fact that not all methods were tested in every store, nor equally frequently in every time period.

Location

There was no significant difference in sales when butter was located in the dairy case in the position first approached by the consumer. However, it is a generally accepted premise that such a position normally results in increased sales for some products. This is especially true when the commodity possesses the characteristics of a so-called impulse item. 3/ It appears that butter would not fall into the category of products classified as impulse foods.

Size of Display

Increasing the size of the butter display in the dairy case by 25 percent did not increase sales. Apparently the standard display used in the 14 experimental stores constituted adequate display of the product.

3/ An impulse item is usually referred to as that type of product which is not a planned purchase.

Pictorial versus Nonpictorial Carton

Although merchandising methods in which the pictorial carton was used did not significantly contribute to increased sales of butter in the experimental stores, it was possible to employ pictorial cartons on only one of several brands of butter. Therefore, butter in pictorial cartons comprised a relatively small proportion of the total butter displayed. In view of this limiting factor, a question arises as to whether different results might have been obtained had the display consisted totally or in a much larger proportion of butter in pictorial cartons (fig. 1).

In addition to the limiting factor as to the amount of butter offered in pictorial cartons in this experiment, there were no promotional activities associated with the introduction of butter in the pictorial carton. Although there is no experimental evidence bearing on this point, the effect on sales of the pictorial carton may have been different, had promotional activities been used.

RELATIONSHIP IN SALES BETWEEN BUTTER AND MARGARINE

Tabulations of sales of butter and margarine were made for four 4-week time periods so as to determine relative changes of movement between these two products. The proportion of butter and margarine sold from one time period to another remained relatively constant (table 2). With the first time period used as a base, margarine sales increased about 7 percent during the second 4-week period, which may be attributed to price reductions during part of the period (table 3). There were similar price reductions on margarine during the third period; however, sales of the product decreased approximately 8 percent from the second time period. This would seem to suggest that consumers had accumulated margarine inventories from the second time period and thus reduced their purchases in the third time period. In contrast to the price changes for margarine, the price of butter remained relatively constant from one time period to another throughout the experiment.

Table 2.--Percent that butter and margarine comprised of the total sales of both products by each 4-week time period, and the total 16-week period, Cleveland, Ohio, spring 1955

Time period	Butter	Margarine
	Percent	Percent
First period	53.8	46.2
Second period	52.2	47.8
Third period	54.2	45.8
Fourth period	53.3	46.7
Average	53.4	46.6

A marked increase in the sales of both butter and margarine took place in the fourth time period. The increases may be attributed to the greater number of potential customers who were exposed to both displays. A stamp plan was introduced into all the stores during the last time period by which stamps were redeemable in premiums based on the consumers' total purchases. The number of customers who entered the stores during the last few weeks of the experiment increased considerably, probably due in part to the stamp plan.

Table 3.--Sales of butter and margarine for 16 weeks, by 4-week periods in Cleveland, Ohio, spring 1955 (sales during first time period=100)

Time period	Butter	Margarine
	Percent	Percent
First period	100.0	100.0
Second period	100.6	107.2
Third period	100.3	98.7
Fourth period	110.0	112.1

METHODOLOGY

The experimental design was planned so as to study 8 different methods of merchandising butter consisting of possible combinations of 3 factors each taking 2 possible forms. The 2 forms for each of the 3 factors are shown below followed by the 8 possible methods of merchandising:

1. Location of butter in the dairy case

    (a) Position -- which is first approached by the normal flow of store traffic (at least before margarine)

    (b) Position -- which is approached last (or at least after margarine) by the consumer in the normal flow of store traffic

2. Quantity of butter in the dairy case

    (a) Set amount either by cubic feet or rows (varying with size of dairy case)

    (b) Twenty-five percent increase over method 2a

3. Type of package

   (a) Pictorial

   (b) Nonpictorial

Method A - Location a, Quantity a and Package a
B - Location a, Quantity a and Package b
C - Location a, Quantity b and Package a
D - Location a, Quantity b and Package b
E - Location b, Quantity a and Package a
F - Location b, Quantity b and Package a
G - Location b, Quantity a and Package b
H - Location b, Quantity b and Package b

Inasmuch as the interest in methods was equal, a balanced design was chosen; that is, each method was used in the same number of stores and for the same number of time periods as was every other method. Time periods of 4 continuous weeks were used in an attempt to establish purchase patterns for each method based upon repeat purchases with the particular method so as to avoid the possibility of comparing merchandising methods solely on their power to induce the customer to purchase once only, and then return to a customary purchasing pattern. Had all 8 methods occurred in every store, the experiment would have had to run for 32 weeks. To shorten the overall time an incomplete block design was used that was balanced with respect to the appearance of treatments in stores and nearly balanced with respect to the appearance of treatments in time periods. This reduced the overall time for the experiment to 16 weeks with only 4 of the 8 methods occurring in any one store. However, all possible pairs of methods occurred in the same number of stores, namely 3. The design is perhaps best visualized as follows:

Group	G_1		G_2		G_3		G_4		G_5		G_6		G_7	
Store	S_1	S_2	S_3	S_4	S_5	S_6	S_7	S_8	S_9	S_{10}	S_{11}	S_{12}	S_{13}	S_{14}
Time period														
P_1	D	F	G	B	G	A	A	E	F	C	E	H	D	H
P_2	E	G	C	A	B	H	D	H	D	E	F	B	C	G
P_3	H	B	H	F	D	F	G	C	B	G	C	A	A	E
P_4	A	C	D	E	E	C	F	B	H	A	D	G	B	F

The P's refer to 4-week time periods, the S's to individual stores, the G's to groups or pairs of stores, and the letters A to H to the 8 methods.

The analysis ordinarily given for the balanced incomplete block design 4/ had to be modified so that the effects of changes over time could be measured and the effects of the various merchandising methods adjusted accordingly. That some such adjustment is necessary is evident from the fact that the methods did not occur symmetrically (that is twice) in every time period. The effect of the adjustment proved to be very small as was to be expected by the slight departure from symmetry in design. An alternative chain block design would have required 16 stores but would have avoided the necessity for adjustment due to lack of equal frequency of the occurrence of methods in each time period. The chain block design is shown below for comparative purposes.

	G_1				G_2				G_3	G_4
	S_1	S_2	S_3	S_4	S_5	S_6	S_7	S_8		
P_1	A	C	E	G	B	D	F	H		
P_2	B	D	F	H	C	E	G	A	[Repeat of the design at left]	
P_3	C	E	G	A	D	F	H	B		
P_4	D	F	H	B	E	G	A	C		

The analysis of variance technique was used in analyzing the data to obtain and assign the existing variation to specific components. The standard error of an adjusted mean was about 100 pounds of butter or about 3.25 percent. In this study the components were time periods, stores, merchandising practices, and experimental error.

Data were gathered under normal store operations. Pricing and advertising policies were uniform for all stores included in the experiment. The coordination of the retailing practices for all stores was made possible by all stores being under the same chain store management.

An enumerator was assigned to the stores. Enumerators were responsible for maintaining the displays in the prescribed manner for each merchandising practice. In addition, they collected records of daily receipts, inventories of beginning and ending periods, spoilage and other data, as well as obtaining cash register readings for determining the potential customers exposed to the merchandising practice being tested.

4/ See for example "Experimental Designs", by W. G. Cochran and G. M. Cox. Wiley Publications, 1950, p. 315.

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